

FOIL MILLER'S 100

Foil A. Miller

2601 Chestnut Ave., Apt. 3508, Glenview, Illinois 60026, USA

E-mail: foilmiller@comcast.net

Foil Allan Miller was born in Aurora, Illinois, on January 18, 1916, and will celebrate his 100th birthday shortly. He was raised in Pepin, Wisconsin, a small village on the upper Mississippi River. He was the only son but had five younger sisters.

He went to college during the Depression and obtained a B.S. in chemistry in 1937 from Hamline University in St. Paul, MN. After a year of graduate work at the University of Nebraska, he transferred to Johns Hopkins University in Baltimore, Maryland, where he obtained his Ph.D. in chemistry as Prof. Richard C. Lord's first graduate student. While in Baltimore he met and married Naomi Zeller. After two years as a postdoctoral fellow at the University of Minnesota with Prof. Bryce Crawford, he taught for four years at the University of Illinois. He moved to Pittsburgh in 1948 to join the staff of the Mellon Institute as Head of its Spectroscopy Division, and later became a Senior Fellow in Independent Research. In 1967 he transferred to the University of Pittsburgh as University Professor and Head of the Spectroscopy Laboratory, and retired from Pitt in 1981. He greatly enjoyed teaching throughout his career.

His research, which has been primarily in infrared and Raman spectroscopy, has been described in about 100 peer-reviewed publications. It has involved six main themes (non-technical readers may wish to skip to the next paragraph!), namely:

- (1) The use of deuterium to analyze vibrational spectra, especially for cyclic molecules such as benzene, cyclobutane, cyclopentane, cyclohexane, and pyrrole.
- (2) An early paper with C. H. Wilkins presented the infrared spectra of many common inorganic compounds and indicated their utility. Hundreds of reprints of the paper were distributed by instrument manufacturers.
- (3) Several inorganic covalent compounds were prepared and their vibrational spectra studied, including those of CrO_2Cl_2 , VOCl_3 , P_2Cl_4 , and B_4Cl_4 .
- (4) A series of papers co-authored with W. G. Fateley dealt with the use of far-infrared spectra for determining barriers to internal rotation.
- (5) Another class of compounds investigated spectroscopically consisted of long linear molecules such as carbon suboxide, dicyanoacetylene, and dicyanodiacetylene.
- (6) Molecules with unusual geometry or bonding, such as cubane, [3]- and [4]-radialenes, and cyclopropanone were acquired or prepared and studied.

Foil's career has produced some impressive metrics. First, he may now be the world's earliest practitioner of Raman and infrared spectroscopy who is still living. He started in Raman in 1939 and with infrared in 1942. Second, he has given over 400 invited professional talks, including a record 32 speaking tours for the American Chemical Society. One talk, "Great Mistakes in Science," was presented 144 times. Third, he has spent at least two nights in all 50 states and in 52 countries. Finally, he may be the only living person who has seen conventional Raman lines with his eyes. They included the N-H stretch of pyrrole and C-H stretches of benzene. It was done by peering at the focal plane of a spectrograph, something that is not done anymore.

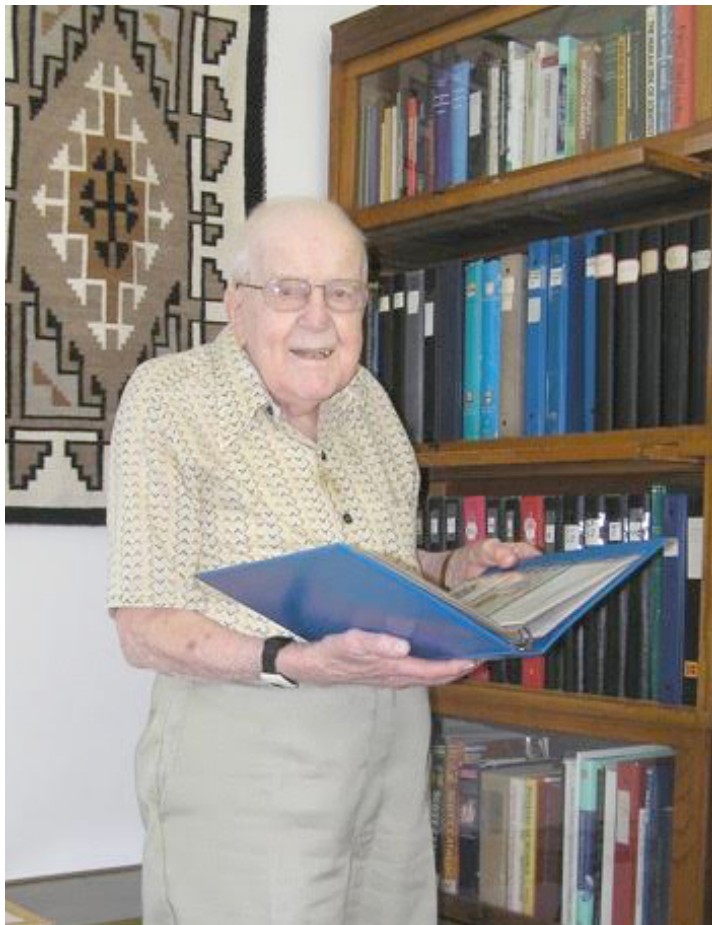
For 53 years he helped Prof. Richard C. Lord present a short summer course on applied infrared spectroscopy, first at MIT and later at Bowdoin College in Maine. This led to being a co-author (with Dana W. Mayo and Robert W. Hannah) of the book *Course Notes on the Interpretation of Infrared and Raman Spectra* (Wiley-Interscience, 2004). He also gave about 20 other short courses on the subject.

Foil has received several honors for his work: a Guggenheim Fellowship for study in Zurich in 1957-58, the Spectroscopy Society of Pittsburgh Award in 1964, the Pittsburgh Award of the American Chemical Society in 1965, the Hasler Award of the Society for Applied Spectroscopy in 1973, and visiting lectureships in Japan (1977), Brazil (1980), and India (1981). For six years he was co-editor of the journal *Spectrochimica Acta* (1957-1963), and for another six years was Secretary of the Commission on Molecular Structure and Spectroscopy of the International Union of Pure and Applied Chemistry (IUPAC, 1969-1975). He has held offices in several scientific organizations: President of the Coblentz Society, Chairman of the Pittsburgh Section of the American Chemical Society, Chairman of the Spectroscopy Society of Pittsburgh, and Chairman of the 1958 Gordon Conference on Infrared Spectroscopy. He has been a member of both the American Chemical Society and the Optical Society of America for over 70 years. He is a Fellow of the latter, and an Honorary Member of the Society for Applied Spectroscopy, the Spectroscopy Society of Pittsburgh, and the Coblentz Society.

Foil is an energetic and well-organized individual who has great zest for life and who enjoys many interests and hobbies. He likes to tell jokes and stories, and has a large quantity of them. He was an ardent hiker, canoeist, and bird watcher. He especially loved to travel, and did a great deal of it. Photography was another hobby, especially when combined with travel. He has given nearly 500 slide show travelogues. He loves his country deeply and delights in making auto trips to see it.

About the time of his retirement from Pitt in 1981, Foil began to collect postage stamps related to chemistry and physics. He became a recognized world authority on the subject, and

assembled one of the world's finest stamp collections on it. He was active in a small international society devoted to the topic and edited the society's quarterly *Philatelia Chimica et Physica* for eight years (1997-2004). In 1988 he and Prof. Edgar Heilbronner of Switzerland co-authored the book *A Philatelic Ramble Through Chemistry*, generally regarded as the bible on the subject. Foil has also written over 180 articles concerning stamps or using them for illustrations. He received the American Topical Association's Distinguished Topical Philatelist Award in 2009.



Foil Miller at the time of his interview for the Chemical Heritage Foundation's Center for Oral History (picture by John Sharkey, 28 June 2011)

Foil is devoted to his family, his country, and his profession. He often expresses deep appreciation for his long and wonderful life and for his close-knit family. He has lost Naomi, his beloved wife of 65 years, but he greatly enjoys the company of his two sons, Bruce of Wilmette, Illinois, and Craig of Seattle, Washington, as well as a grandson and granddaughter and four living sisters.

